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FAX TRANSMISSION

Date: February 11, 2008

To: Examiner S. Kruer GAU 3654 U.S. Patent and Trademark Office

Fax: 571-273-8300

From: William J. Clemens

Re: 16615

We are transmitting a total of __25__ pages (including cover sheet).
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COMMENTS: Please see the following Fee Transmittal form, transmittal of Appeal Brief, Brief on Appeal for filing in the patent application S/N 10/717,805. Thank you.

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FEE TRANSMITTAL
For FY 2008

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($)	510.00

Complete if Known	
Application Number	10/717,805
Filing Date	November 20, 2003
First Named Inventor	Parrini
Examiner Name	S. Kruer
Art Unit	3654
Attorney Docket No.	16615

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 50-3156 Deposit Account Name: Fraser Clemens Martin &

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	310	155	510	255	210	105	
Design	210	105	100	50	130	65	
Plant	210	105	310	155	160	80	
Reissue	310	155	510	255	620	310	
Provisional	210	105	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	210	105
Multiple dependent claims	370	185

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 20 or HP =	_____	x _____	= _____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 3 or HP =	_____	x _____	= _____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims: Fee ($) _____ Fee Paid ($) _____

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3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
_____ - 100 =	_____	/ 50 = _____ (round up to a whole number)	x _____	= _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): Appeal Brief	510.00

SUBMITTED BY

Signature	[signature]	Registration No. (Attorney/Agent) 26,855	Telephone 248-960-2100
Name (Print/Type)	William J. Clemens		Date February 11, 2008

CERTIFICATE OF FACSIMILE TRANSMISSION UNDER 37 CFR 1.8
I hereby certify that this correspondence is being facsimile transmitted to the Commissioner for Patents on:

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Date of signature and transmission Feb. 11, 2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: PARRINI, Lorenzo	Confirmation No. 8662 Group Art Unit: 3654
Serial No.: 10/717,805	Examiner: KRUER, Stefan
Filed: November 20, 2003	Attorney Docket: 16615
For: REINFORCED SYNTHETIC CABLE FOR ELEVATORS	Customer No.: 43935

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Honorable Sir:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on December 13, 2007. Pursuant to 37 CFR §41.20(b)(2), please charge the fee for filing the Appeal Brief to Deposit Account No. 50-3156.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: PARRINI, Lorenzo	Confirmation No. 8662 Group Art Unit: 3654
Serial No.: 10/717,805	Examiner: KRUER, Stefan
Filed: November 20, 2003	Attorney Docket: 16615
For: REINFORCED SYNTHETIC CABLE FOR ELEVATORS	Customer No.: 43935

BRIEF ON APPEAL

(i) *Real Party in Interest:*

The real party in interest is INVENTIO AG, the assignee of record.

(ii) *Related Appeals and Interferences:*

Applicants are not aware of any related appeals or interferences.

(iii) *Status of Claims:*

Claims 1-15 remain pending in the application.

The status of each of the claims is as claimed:

1. Claims 1-15 are rejected.

A utility patent application was filed on November 20, 2003 with Claims 1-15, wherein Claims 1, 7 and 11 are independent claims, Claims 2-6 depend from Claim 1, Claims 8-10 depend from Claim 7 and Claims 12-15 depend from Claim 11.

A first office action was received on November 8, 2005, in which the Examiner rejected claims 1-15. Specifically, the Examiner rejected Claims 11 – 15 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Additionally, Claims 1-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over De Angelis (USPN 5,566,786) in view of Olesen, et al. (USPN 4,956,039).

On February 6, 2006, Applicant filed a timely response amending the specification to amend the initial reference to reference numeral 5' in Figure 6 as a fiber

and not a cable, as it is subsequently referred to as a fiber throughout the remainder of the specification. Independent Claims 1 and 11 were also amended and remaining Claims 2-10 and 12-15 were re-presented without amendment.

On March 23, 2006, a final office action was received wherein the Examiner finally rejected Claims 1-15, maintaining the rejection under 35 USC 103(a) as being unpatentable over De Angelis in view of Olesen, et al.

On June 21, 2006, Applicant filed a timely response amending independent Claims 1 and 7 and dependent Claim 2. Claims 1-15 remained pending in the application.

On June 29, 2006, an Advisory Action was received wherein the Examiner stated that the proposed amendments of June 21 6, 2006, would not be entered because they raise new issues that would require a further search. The status of the claims as a result of the advisory action was that Claims 1-15 were rejected.

On July 21, 2006, Applicant filed a Request for Continued Examination without further amendment.

On November 3, 2006, a Notice of Abandonment was received stating that Applicant had failed to file a timely response to the Advisory Action dated June 29, 2006.

On December 7, 2006, an Interview Summary was filed as a result of a telephonic interview between the Examiner and Applicant's Attorney of Record in which the Examiner confirmed that Applicant had filed a timely Request for Continued Examination and withdrew the Notice of Abandonment.

On January 5, 2007, a nonfinal office action was received wherein the Examiner misstated on the cover sheet that only Claims 1-13 remained in the application and all were rejected. However, in the substance of the action, the Examiner stated that Claims 1-15 were rejected under 35 USC 103(a) as being unpatentable over De Angelis in view of LaNieve, et al. (USPN 5,437,899).

On April 5, 2007, Applicant filed a timely response, amending independent Claims 1, 7 and 11, although misstating that Claims 7 and 11 were previously presented rather than currently amended. However, in the substance of the remarks, Applicant correctly states that all three claims have been currently amended.

On April 20, 2007, a final office action was received wherein the Examiner finally rejected Claims 1-15, maintaining the rejection under 35 USC 103(a) as being unpatentable over De Angelis in view of LaNieve, et al.

On July 20, 2007, Applicant filed a timely response amending independent Claims 1, 7 and 11.

On July 31, 2007, an Advisory Action was received wherein the Examiner stated that the proposed amendments of July 20, 2007, would not be entered because they raise new issues that would require a further search. The status of the claims as a result of the advisory action was that Claims 1-15 were rejected.

On August 18, 2007, Applicant filed a timely Request for Continued Examination and filed a Preliminary Amendment with the Request. In the amendment, independent Claims 1, 7 and 11, along with dependent Claims 3, 8 and 14 were amended.

On September 13, 2007, a nonfinal office action was received wherein the Examiner rejected Claims 1-15. Specifically, the Examiner rejected Claims 5, 10 and 15 under 35 U.S.C. 112, first paragraph, for failing to comply with the written description requirement. Claims 8 and 14 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Further, Claims 1-7, 9-13 and 15 were rejected under 35 USC 103(a) as being unpatentable over De Angelis in view of Olesen, et al.

On December 13, 2007, a Notice of Appeal was timely filed by Applicant along with a Pre-Brief Conference Request.

On January 4, 2008, a Pre-Brief Appeal Conference decision was received wherein the Panel determined that the application remains under appeal because there is at least one actual issue for appeal. The Panel determined the status of the claims for purposes of the appeal are as follows:

1. Claims 1-15 are finally rejected.

The claims on appeal are 1-15. A copy of the claims on file is submitted in the attached Appendix.

(iv) *Status of amendments:*

The amendment filed on August 18, 2007 was entered and considered by the Examiner in the nonfinal office action dated September 13, 2007.

(v) *Summary of claimed subject matter:*

The invention sought to be patented relates to a cable or belt used as a support means for elevators.

By way of background, a drive pulley is often used in an elevator installation in order to move a car. The drive pulley and the car are connected together by a cable. A drive unit sets the drive pulley into rotational movement. The rotational movement of the drive pulley is converted into linear movement of the car by a friction couple between the drive pulley and the cable. The cable then serves as a combined support and drive means, whilst the drive pulley serves as a force transmission means.

In its function as a support means the cable supports an operating weight of the elevator, consisting of the empty weight of the car, the useful load of the elevator, an optional counterweight and the weight of the cable. The cable is principally loaded by tension forces. For example, the car and the counterweight are suspended from opposite ends of the cable subject to gravitational force at the support means.

In its function as a drive means for movement of the car the cable is pressed against a drive surface of the drive pulley, the cable is subjected to compression and bending loads. For example, the cable is pressed by the operating weight of the elevator against a circumference of the drive pulley so that the cable and the drive pulley are disposed in friction couple.

In its function as a force transmission means, the drive pulley transmits the force of the drive to the cable. Important parameters are a material-specific coefficient of friction between the drive pulley and the cable and a construction-specific angle of looping of the drive pulley by the cable.

Up to now steel cables have been used in elevator construction, which cables are connected with the drive pulley, the car and the counterweight. Due to the high intrinsic weight of the steel cable, limits are placed on the travel height of an elevator installation. Moreover, the coefficient of friction between the metal drive pulley and the steel cable is

so small that the coefficient of friction has to be increased by various measures such as special groove shapes or special groove linings in the drive pulley or by enlargement of the angle of looping. In addition, the steel cable acts as a sound bridge between the drive and the car which means a reduction in travel comfort. Expensive constructional measures are necessary in order to reduce these undesired effects. Steel cables tolerate, by comparison with synthetic material cables, a lesser bending cycle rate, are subject to corrosion and have to be regularly serviced.

Synthetic material cables normally consist of several load-bearing strands which are wound together and/or packed together. Synthetic material cables demonstrate a very good longitudinal strength, which is, however, opposed by poor radial strength. The synthetic material cables tolerate, with difficulty, the load which is exerted on the outer surface thereof and which can lead to an undesired shortened service life of the cable. The modulus of elasticity of the synthetic material cables currently in use is too small for elevators with greater travel heights: undesired elongations of the cable occur and troublesome oscillations of the elevator which is set in motion are noticed by the user, particularly when the length of the cable has exceeded a specific limit. Belts used as support or drive means are also known.

The advantages achieved by the cable of the present invention are that the strands of a sheathed cable or belt which consists of several layers of synthetic material are reinforced by the introduction of a second phase into the aramid forming the fibers and thus have a higher modulus of elasticity than that of the unreinforced strands. The reinforced cable obtained demonstrates a higher modulus of elasticity in the longitudinal direction than that of the unreinforced cable. The reinforced cable also demonstrates a higher modulus of elasticity, a higher strength and higher breakage strain in a radial direction and a longer service life than those of the cable without reinforcement. (Specification, pages 1-3 and Figures 1-4).

The novel apparatus as set forth in independent Claim 1 comprises: an elongated load-bearing support 1′ with load-bearing strands 4 each having a plurality of fibers 5′, the strands 4 being surrounded by a sheath 2, (Specification page 6, lines 13-18 and Figure 5) the strands 4 comprising: a plurality of load-bearing fibers 5′ formed of a base material 13 being in a first phase (Specification page 6, lines 31-32; page 7, line 1 and

Figures 6 and 7); and a reinforcing material 12 being in a second phase and being distributed in said base material 13 (Specification page 7, lines 1-5 and Figures 6 and 7) whereby said reinforcing material 12 increases a modulus of elasticity of the strands 4 in a longitudinal direction of said fibers 5' (Specification page 7, lines 19-21 and Figure 9) for supporting at least one of an elevator car and an elevator counterweight.

The novel apparatus as set forth in independent Claim 7 comprises: an elongated load-bearing elevator support device 1' with load-bearing strands 4 each having a plurality of fibers 5'; the strands 4 being surrounded by a sheath 2, (Specification page 6, lines 13-18 and Figure 5) the strands 4 comprising: a plurality of fibers 5' formed of a base material 13 being in a first phase (Specification page 6, lines 31-32; page 7, line 1 and Figures 6 and 7); and a reinforcing material 12 being in a second phase and being distributed in said base material 13 (Specification page 7, lines 1-5 and Figures 6 and 7) whereby said reinforcing material 12 increases a modulus of elasticity of the strands 4 in a longitudinal direction of said fibers 5' (Specification page 7, lines 19-21 and Figure 9) for supporting at least one of an elevator car and an elevator counterweight.

The novel method as set forth in independent Claim 11 comprises: a method of producing an elongated elevator load-bearing support device 1' comprising the steps of: producing a plurality of fibers 5' formed of a base material 13 being in a first phase (Specification page 6, lines 31-32; page 7, line 1 and Figures 6 and 7) and reinforced by a reinforcing material 12 being in a second phase and being distributed in said base material 13 (Specification page 7, lines 1-5 and Figures 6 and 7); forming a plurality of load-bearing strands 4 with said fibers 5'; and surrounding said strands 4 with a sheath 2 (Specification page 6, lines 13-18 and Figure 5) to form the support device whereby the reinforcing material 12 increases a modulus of elasticity of the strands 4 in a longitudinal direction of the fibers 5' (Specification page 7, lines 19-21 and Figure 9) for supporting at least one of an elevator car and an elevator counterweight.

(vi) *Grounds of Rejection to be Reviewed on Appeal:*

1. The rejection of Claims 5, 10 and 15 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement because the claims contain subject matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention;

2. The rejection of Claims 8 and 14 under 35 U.S.C. 112, second paragraph, because they recite the limitation "... said second phase reinforcing material increases a modulus of elasticity of said fibers in a radial direction of said fibers", whereby the respective independent claim from which the aforementioned claims depend recite "... increases modulus of elasticity of the strands in a longitudinal direction of said fibers...";

3. The rejection of Claims 1-7, 9-13 and 15 under 35 U.S.C. 103(a) as being unpatentable over De Angelis (5,566,786) in view of Olesen, et al. (4,956,039); and

4. The rejection of Claims 8 and 14 under 35 U.S.C. 103(a) as being unpatentable over De Angelis in view of LaNieve et al (5,437,899).

(vii) *Argument:*

The rejection of Claims 5, 10 and 15 under 35 U.S.C. 112, first paragraph:

The Examiner states that Claims 5, 10 and 15 fail to comply with the written description requirement because the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner calls into question the arrangement and distribution of a reinforcing material in a base material, wherein said reinforcing material is in the form of at least one of spheres, grains, capsules, discs and plates, whereby the modulus of elasticity of a fiber containing said reinforcing materials is increased in a longitudinal direction of said fiber. According to the Examiner, the disclosure of the instant invention reviews a random as well as parallel distribution of reinforcing material, wherein the modifiers random and parallel refer to the orientation of the reinforcing material. The Examiner stated that, as addressed in the prior art reference of the previous office actions and as newly cited within the last nonfinal office action dated September 13, 2007, the use of randomly orientated (psuedoisotropic) reinforcing material provides the least strength, in comparison to unidirectional (parallel) and bidirectional orientation. Consequently, according to the Examiner, a reinforcing material comprising either spheres, grains,

capsules, discs or plates, wherein said material has a higher stiffness than the base material, would result in localized concentration of stresses that would compromise the longitudinal elasticity of the base material, rendering the base material less resilient to loading.

Base Claims 1, 7 and 11 each recite that the reinforcing material increases a modulus of elasticity of the strands in a longitudinal direction of the fibers. While random distribution and parallel distribution of the reinforcing material may result in different values, both create an increase in the modulus of elasticity of the strands in a longitudinal direction of the fibers as recited in the claims. The rejection under 35 U.S.C. 112, first paragraph is improper.

The rejection of Claims 8 and 14 under 35 U.S.C. 112, second paragraph:

The Examiner rejects claims 8 and 14 because they recite the limitation "... said second phase reinforcing material increases a modulus of elasticity of said fibers in a radial direction of said fibers", whereby the respective independent claim from which the aforementioned claims depend recite "... increases modulus of elasticity of the strands in a longitudinal direction of said fibers..." According to the Examiner, it is unclear whether the depending limitation is to replace the independent limitation or it is to be in addition to the independent limitation, e.g. "... said second phase reinforcing material increases a modulus of elasticity of said fibers in both a radial direction and a longitudinal direction of said fibers". For purpose of prosecution, the Examiner applied the former (e.g. radial direction only).

Applicant states in the specification that the modulus of elasticity of the entire fiber in the longitudinal direction and/or the transverse direction is increased. (Page 7, Lines 22-24). There is no language in Claims 8 and 14 that would indicate that Applicant meant to replace the longitudinal direction limitation recited in Claims 7 and 11 with the radial direction limitation.

The rejection of Claims 1-7, 9-13 and 15 under 35 U.S.C. 103(a):

The Examiner rejected Claims 1-7, 9-13 and 15 under 35 U.S.C. 103(a) as being unpatentable over De Angelis (5,566,786) in view of Olesen et al. (4,956,039). It is the

Examiner's opinion that it would have been obvious to one of ordinary skill in the art to modify the base material of De Angelis with the teaching of Olesen in order to gain the commercial and structural (performance) features.

The Examiner cited De Angelis in view of Olesen as the basis of rejection in the Office Actions dated November 8, 2005 and March 23, 2006. Applicant's responses are found on Page 9 of the Amendment dated February 6, 2006 and Pages 7-9 of the Amendment dated June 21, 2006. Applicant apparently overcame the rejections because the Examiner abandoned Olesen as a reference in the rejections set forth in the Office Actions dated January 5, 2007 and April 20, 2007. All that Olesen teaches is the placing the short reinforcement elements in a sleeve of a cable. One of ordinary skill in the art would apply the teaching of Olsen to the elevator cables of De Angelis by introducing the reinforcements into the cable sheathing 2, but not into the load-bearing fibers 5 of the cable. There is no teaching in either De Angelis or Olesen of a support device with load-bearing fibers consisting of at least two phases.

In support of the rejection of Claims 1 and 7, the Examiner stated that De Angelis discloses an elongated load-bearing support device 1 with load bearing strands 4, each having a plurality of fibers 5 of a base material in a first phase (aramid fibers (Col. 2, Line 38)) and the strands being surrounded by a sheath 7. The Examiner further stated that the reinforcing material of De Angelis is of a second phase, yet it is externally applied to the base material for the protection of the fibers 5" (Col. 3, Line 57) whereby the bending fatigue strength of the cable 1 is increased. Applicant agrees that De Angelis shows an impregnating medium being in a second phase applied externally to the strands 4 that are twisted or laid out of the individual aramid fibers 5.

The Examiner stated that Olesen, however, discloses the application of a thermoplastic sleeve that "...is preferably filled with reinforcement elements having a high modulus of elasticity..." (Col. 2, Line 60), as well as a core string comprising a thermoplastic material with filaments of "...preferably E-glass... S-glass... aramid or carbon...", such that the distribution of reinforcing material of one phase within a base material of another (second) phase is taught. The Examiner is of the opinion that it would have been obvious to one of ordinary skill in the art to modify the base material of De

Angelis with the teaching of Olesen, in order to gain the commercial and structural (performance) features of Olesen.

Applicant's novel invention introduces two phases in the fibers of the elevator cable, thereby increasing the travel comfort and safety. In particular, the following disadvantages are eliminated: the short service life of the cable, the low modulus of elasticity of the cable, the undesired elongation of the cable and the troublesome oscillations of the lift set in motion (see Page 3, Lines 5-8). The improvement of the mechanical properties is caused by the new phase introduced in the bulk of the load-bearing fiber.

Applicant's Claims 1 and 7 recite that the strands are formed of load-bearing fibers of a base material being in a first phase and a reinforcing material being in a second phase. These claims define a load-bearing support formed with the load-bearing strands surrounded by a sheath. The strands are made from a plurality of the load-bearing fibers formed of the base material being in the first phase and the reinforcing material being in the second phase and being distributed in the base material. De Angelis does not show or suggest load-bearing fibers wherein reinforcing material being in a second phase is distributed in the base material being in a first phase as recited in Claims 1 and 7. The De Angelis second phase material is applied externally to the strands and is not distributed in the fibers. (Col. 2, Lines 16-18; Col. 3, Lines 56-59).

De Angelis and Olesen do not show or suggest any new phase introduced in the bulk of the fibers. The fibers disclosed in both documents consist of only one phase.

De Angelis discusses the synthetic fiber cable 1 shown as prior art in Applicant's Fig. 1. De Angelis uses a polyurethane solution to impregnate the strands 4 and protect the fibers 5. While the bending fatigue strength of the cable 1 depends upon the portion of polyurethane at each strand 4, the carrying capacity and the modulus of elasticity of the cable 1 fall with increasing portions of polyurethane. There is no suggestion that the polyurethane is a reinforcing material for the fibers 5.

Olesen discusses the introduction of short reinforcement elements 23 in the second thermoplastic sleeve 13 of the cable, which sleeve does not comprise the load-bearing fibers 11, but is merely a sheath of the cable. The reinforcements 23 do not modify the mechanical properties of the load-bearing fibers 11 or even of the second

thermoplastic sleeve 13. They simply help to achieve a more intimate contact between the first and the second thermoplastic material during the extrusion process (see Column 3, Lines 7-16; Column 7, Lines 16-22), since these reinforcements partially penetrate from the second into the first thermoplastic material.

Thus, the materials identified by the Examiner in De Angelis and Olesen as "reinforcing material" are applied exteriorly to the strands and are not distributed in the base material of the individual fibers as defined by Applicant's claims. Accordingly, Claims 1-15 are not obvious with respect to any combination of De Angelis and Oleson.

Thus, all that Olesen teaches is the placing the short reinforcement elements in a sleeve of a cable. One of ordinary skill in the art would apply the teaching of Olsen to the elevator cables of De Angelis by introducing the reinforcements into the cable sheathing 2, but not into the load-bearing fibers 5 of the cable. There is no teaching in either De Angelis or Olesen of a support device with load-bearing fibers consisting of at least two phases.

The introduction by Applicant of two phases in the fibers of the elevator cable increases the travel comfort and safety. In particular, the following disadvantages are eliminated: the short service life of the cable, the low modulus of elasticity of the cable, the undesired elongation of the cable and the troublesome oscillations of the lift set in motion (see Page 3, Lines 2-8). The improvement of the mechanical properties is caused by the new phase introduced in the bulk of the load-bearing fiber.

The patents cited by the Examiner do not disclose any new phase introduced in the bulk of the fiber. The fibers disclosed in both prior art documents consist of only one phase.

The Examiner stated that Applicant's arguments filed February 6, 2006 have been fully considered but they are not persuasive. The Examiner noted that the load-bearing fibers of De Angelis, comprising a first phase, are treated by "... an impregnating medium..." comprising a second phase, whereby the bending fatigue strength of the combined fibers is increased. The Examiner assumed that, furthermore, through impregnation, the fibers of his invention are saturated or infused with his reinforcing material, polyurethane, thereby introducing the reinforcing material into the fibers. However, both the quoted statement and the assumption by the Examiner are incorrect.

With respect to the Examiner's statement, the individual fibers 5 of De Angelis are not treated. The impregnating medium is applied to the strands 4 (Col. 3, Lines 56-59). Furthermore, the Examiner admits that De Angelis "is silent regarding the treatment of the individual fibers." (Final Office Action, Page 3, Paragraph 2).

Also, there is no disclosure in De Angelis that the impregnating medium enters the individual fibers 5 or that the individual fibers "are saturated or infused with his reinforcing material, polyurethane, thereby introducing the reinforcing material into the fibers." De Angelis teaches that the impregnating medium, for example a polyurethane solution, is applied to the strands 4 for the protection of the fibers 5. (Col. 3, Lines 57-59) Applicant requests that the Examiner identify any support in De Angelis for the proposition that the impregnating medium enters the fibers 5.

In summary, the De Angelis and Olesen patents cited by the Examiner do not disclose any new phase introduced in the bulk of the fiber. The fibers disclosed in both prior art documents consist of only one phase. Therefore, the claimed invention would not be obvious to one of ordinary skill in the art.

The rejection of Claims 8 and 14 under 35 U.S.C. 103(a):

The Examiner rejected Claims 8 and 14 under 35 U.S.C. 103(a) as being unpatentable over De Angelis in view of LaNieve et al (5,437,899). Applicant's responses are found on Page 6 of the Amendment dated April 5, 2007 and Pages 8-9 of the Amendment dated August 18, 2007.

According to the Examiner, LaNieve teaches "further that such addition of particulate matter will enhance the flexural strength (modulus of elasticity) of the fiber.

Applicant believes that the Examiner listed the wrong patent number for LaNieve. USPN 6,162,538 to LaNieve states, at Col. 7, Lines 11-16 that the tensile properties of the fiber (tenacity and modulus) decrease. Thus, the combination suggested by the Examiner does not increase the modulus of elasticity in the longitudinal direction of the fibers as recited in Applicant's amended claims.

In support of this rejection, the Examiner states that De Angelis discloses an elongated load-bearing support device (1) with load bearing strands (4), each having a plurality of fibers (5) of a base material in a first phase (aramid fibers (Col. 2, Line 38))

and the strands being surrounded by a sheath (7). The reinforcing material of De Angelis is of a second phase, yet it is externally applied to the base material as "... an impregnating medium, for example polyurethane solution, for the protection of the fibers 5" to increase the bending strength. Attention is directed to LaNieve et al, as cited for reference in previous office actions, who teach, "... polymers have been mixed with particulate matter and made into fibers..." (Col. 1, Line 54), whereby the particulate matter of their invention being "...an elemental metal or metal alloy, or may be nonmetallic..." (Col. 6, Line 14), whereby their polymer is an aromatic polyamide known as aramid. LaNieve et al. teach further that such addition of particulate matter will enhance the flexural strength (modulus of elasticity in shear) of the fiber.

The Examiner reasons that it would have been obvious to one of ordinary skill in the art to modify the base material of De Angelis with the teaching of LaNieve et al, in order to gain the features of materials of high flexural strength for applications whereby the material is to maintain a load while experiencing frequent/continuous radial deflection; for safety and durability.

In the Advisory Action dated July 31, 2007, the Examiner stated that with respect to Applicant's arguments for Claim 1 and, notably, the reference of LaNieve, Applicant has accurately noted that LaNieve teaches that through the introduction of particles to "certain types of aromatic polyamide fibers", an enhancement of the cut-resistance, therein the flexural strength (modulus of elasticity in shear), is achieved at the expense of tensile strength - as acknowledged in the previous office action. However, the inventive feature of LaNieve is to provide enhanced cut-resistance while minimizing a reduction in tensile strength, as referenced in the previous office actions. This enhancement in flexural strength anticipates the claim language of the instant invention, with respect to the pertinent Claims 1 and 3, "...whereby said reinforcing material increases a modulus of elasticity of the strands" and "... wherein...said reinforcing material increases a modulus of elasticity of each of said fibers in a longitudinal and/or radial direction of said fibers", respectively. LaNieve teaches such increase of modulus of elasticity in a radial direction.

Furthermore, with respect to cut-resistance, the benefit of this feature is reviewed in the specification of the instant invention (Page 6, Lines 8 - 11), wherein the lack of such resistance precludes the use of steel cable locks with cables made from synthetic

fibers, in that the clamping forces of such cable locks overcome the "transverse strength" of the synthetic fiber of interest -aramid - resulting in a reduction in its "breakage load".

LaNieve teaches further, "The multicomponent aramid fibers of the invention can ... also exhibit excellent tensile strength" (Col. 3, Line 27), wherein a multicomponent fiber has "...at least two aromatic polyamide polymeric components, namely, an unfilled aromatic polyamide polymeric component and a filled aromatic polyamide polymeric component" (Col. 3, line 19) - the former and latter comprising a base material in a first phase, with a reinforcing material of a second phase distributed throughout the latter.

With respect to Applicant's comments to an abrasion of "downstream... equipment", though not pertinent to the claim language, LaNieve teaches that such abrasion is "significantly decreased (sic) ... resulting in a longer useful life for downstream manufacturing equipment" Conversely, the fiber of LaNieve offers an increase in (surface) wear resistance. (It should be noted that the downstream equipment as intended in the instant invention is one of pulleys/sheaves - not manufacturing equipment as used in the processing/spinning of synthetic fiber(s).)

Furthermore, Claim 1 fails to recite a specific fiber material, though the specification is nearly exclusive to the use of aramid as disclosed by De Angelis. Consequently, the claim language remains quite broad.

Applicant amended independent Claims 1, 7 and 11 to clarify that the reinforcing material increases a modulus of elasticity of the strands in a longitudinal direction of the fibers for supporting at least one of an elevator car and an elevator counterweight.

LaNieve teaches that the addition of particulate matter reduces the tensile modulus of elasticity of polymer fibers. In particular, LaNieve recites at Col. 2, Lines 28-39:

> However, the addition of particles to certain types of aromatic polyamide fibers can have a **severe detrimental impact on fiber tensile strength**. In particular, the addition of particles to "para-aramid" fibers, such as Kevlar®), spun from lyotropic liquid crystal solutions, can significantly reduce the tenacity and elongation of the resulting fibers. It is believed the inclusion of such particles disrupts the liquid crystalline structure of the para-aramid fiber, thereby decreasing tensile strength. Still

further, the presence of hard particles in aramid fibers generally can abrade downstream textile equipment. (Emphasis added)

A decrease of the tensile strength of the fibers for a rope in elevator equipment is absolutely unacceptable, because it can lead to the crash of the elevator car. Thus, the LaNieve document discourages dramatically the person skilled in the art of elevators seeking to increase the modulus of elasticity of elevator aramid ropes in the longitudinal direction from adding second phase particles into the polymer matrix of the fibers. US Patent No. 6,162,538 clearly leads the man skilled of the art away from the claimed invention.

Applicant respectfully submits that according to the Examiner, LaNieve teaches "further that such addition of particulate matter will enhance the flexural strength of the fiber, while reducing its tensile strength (modulus of elasticity). This observation by the Examiner is confirmed in LaNieve Col. 7, Lines 11-16. Thus, the combination suggested by the Examiner produces the opposite result regarding the modulus of elasticity as that recited in Applicant's amended claims.

Applicant respectfully submits that the rejections of Claims 5, 10 and 15 under 35 USC 112, first paragraph and Claims 8 and 14 under 35 USC 112, second paragraph are improper and requests withdrawal of both. Independent Claims 1, 7and 11 are novel over the prior art of record. Remaining Claims 2-6, 8-10, and 12-15 depend from these claims and are, therefore, also allowable.

For the foregoing reasons, Applicant respectfully submits that the claims on appeal each define subject matter which is not rendered obvious to one of ordinary skill in the art at the time the invention was made. Accordingly, all of the claims on appeal are believed to be entitled to allowance, and a favorable decision is courteously solicited.

Respectfully submitted,

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(viii) *Claims Appendix:*

The claims on Appeal read as follows:

1. (Previously Presented) An elongated load-bearing support with load-bearing strands each having a plurality of fibers, the strands being surrounded by a sheath, the strands comprising:

a plurality of load-bearing fibers formed of a base material being in a first phase; and

a reinforcing material being in a second phase and being distributed in said base material whereby said reinforcing material increases a modulus of elasticity of the strands in a longitudinal direction of said fibers for supporting at least one of an elevator car and an elevator counterweight.

2. (Previously Presented) The support device according to claim 1 wherein the strands having said plurality of fibers are formed into one of a cable and a belt.

3. (Previously Presented) The support device according to claim 1 wherein said base material is one of steel, plastic, synthetic compositions, aramid and Zylon and said reinforcing material increases a modulus of elasticity of each of said fibers in a radial direction of said fibers.

4. (Original) The support device according to claim 1 wherein said reinforcing material has a higher modulus of elasticity than a modulus of elasticity of said base material.

5. (Original) The support device according to claim 1 wherein said reinforcing material is arranged and distributed in said base material in the form of at least one of long fibers, short fibers, spheres, grains, capsules, discs and plates forming a matrix.

6. (Original) The support device according to claim 1 wherein said plurality of fibers is surrounded by a sheath.

7. (Previously Presented) An elongated load-bearing elevator support device with load-bearing strands each having a plurality of fibers; the strands being surrounded by a sheath, the strands comprising:

a plurality of fibers formed of a base material being in a first phase; and

a reinforcing material being in a second phase and being distributed in said base material whereby said reinforcing material increases a modulus of elasticity of the strands in a longitudinal direction of said fibers for supporting at least one of an elevator car and an elevator counterweight.

8. (Previously Presented) The elevator support device according to claim 7 wherein said first phase base material is one of steel, plastic, synthetic compositions, aramid and Zylon, and said second phase reinforcing material increases a modulus of elasticity of said fibers in a radial direction of said fibers.

9. (Original) The elevator support device according to claim 7 wherein said reinforcing material has a higher modulus of elasticity than a modulus of elasticity of said base material.

10. (Original) The elevator support device according to claim 7 wherein said reinforcing material is arranged and distributed in said base material in the form of at least one of long fibers, short fibers, spheres, grains, capsules, discs and plates forming a matrix.

11. (Previously Presented) A method of producing an elongated elevator load-bearing support device comprising the steps of:

a. producing a plurality of fibers formed of a base material being in a first phase and reinforced by a reinforcing material being in a second phase and being distributed in said base material;

b. forming a plurality of load-bearing strands with said fibers; and

c. surrounding said strands with a sheath to form the support device whereby the reinforcing material increases a modulus of elasticity of the strands in a longitudinal direction of the fibers for supporting at least one of an elevator car and an elevator counterweight.

12. (Original) The method according to claim 11 including a step of selecting the base material from steel, plastic, synthetic compositions, aramid and Zylon.

13. (Original) The method according to claim 11 including a step of selecting the reinforcing material to have a higher modulus of elasticity than a modulus of elasticity of the base material.

14. (Previously Presented) The method according to claim 11 including a step of selecting the reinforcing material to increase a modulus of elasticity of the fibers in a radial direction of the fibers.

15. (Original) The method according to claim 11 including a step of forming the reinforcing material as particles in the form of at least one of long fibers, short fibers, grains, capsules, spheres, discs and plates.

(ix) *Evidence Appendix:*

None.

(x) *Related Proceedings Appendix:*

None.